

SUBJECT SOUTH END URBAN RENEWAL AREA R-56

RECOMMENDED FOUNDATIONSGENERAL NOTES

BOSTON PUBLIC WORKS

GOVDOC

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1. RECOMMENDED FOUNDATIONS ARE IN ACCORDANCE WITH SOIL PROFILES AT CENTER LINES OF 6 STREETS THROUGH THE SOUTH END URBAN RENEWAL AREA AND ARE INDICATED FOR 6 AREAS, AS FOLLOWS:
 - 1.) COLUMBUS AVE AREA - FROM WALPOLE ST. TO CLARENDON ST.
 - 2.) TREMONT ST AREA - FROM WALPOLE ST. TO HERALD ST.
 - 3.) SHAWMUT AVE AREA - FROM BALL ST. TO HERALD ST.
 - 4.) WASHINGTON ST AREA - FROM BALL ST. TO HERALD ST.
 - 5.) HARRISON AVE AREA - FROM THORNDIKE ST. TO DOVER ST.
 - 6.) ALBANY ST. AREA - FROM NORTHAMPTON ST. TO DOVER ST.
2. IN ALL 6 AREAS THE RECOMMENDED FOUNDATIONS ARE INDICATED FOR TWO TYPES OF BUILDING HEIGHTS:
 - a) BUILDINGS 1 STORY TO 3 STORIES HIGH, AND
 - b) BUILDINGS - FROM 1 STORY TO 9 STORIES HIGH.
3. IN ACCORDANCE WITH SOIL CONDITION IN VARIOUS AREAS TWO MAIN TYPES OF FOUNDATIONS ARE RECOMMENDED:
 - a) SPREAD WALL FOOTINGS FOR 1-3 STORY BUILDINGS WITH MAX. ALLOWABLE SOIL PRESSURE 1 TO 2 $\frac{\text{TN}}{\text{SQ. FT.}}$.
IN SOME AREAS WHERE SOIL PROFILE SHOWS DEEP FILL OR SOFT ORGANIC MATERIALS - PILE FOUNDATIONS ARE RECOMMENDED FOR BUILDINGS AS BEING A MORE ECONOMICAL AND SAFE SOLUTION.
 - b) FOR BUILDINGS HIGHER THAN 3 STORIES IN ALL AREAS ONLY PILE FOUNDATIONS ARE RECOMMENDED, ESPECIALLY IN THE ALBANY ST. AREA WHERE DEEP MUD AREAS EXIST.
4. SEE SHEETS No. 2 TO No. 7 FOR DETAILS

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THE THOMPSON & LICHTNER CO., INC.

SUBJECT SOUTH END URBAN RENEWAL AREA R-56

SHEET No. 2
 DATE 1/3/64
 MADE BY V.O.
 CHECKED BY RFB

RECOMMENDED FOUNDATIONS

AREA No.	AREA / LOCATION	TYPE OF BUILDINGS	TYPE OF FOUNDATION	REMARKS
1.	<u>COLUMBUS AVE</u>			<u>NOTES:</u>
	1) <u>WALPOLE ST. TO BENTON ST.</u> <u>DWG. SP-1</u>	1 STORY TO 3 STORIES	<u>SPREAD WALL</u> <u>FOOTINGS ON</u> <u>COMPACTED</u> <u>GRAVEL FILL</u> <u>MAX. LOAD. 2TH</u> <u>30. FT</u>	1. SEE LOCATION PLAN FOR AREA ON EACH DWG.
	2) <u>BENTON ST TO</u> <u>NORTHAMPTON ST.</u> <u>DWG SP-1</u>	3 STORIES-UP 1 STORY-UP	<u>PILES</u> <u>PILES</u>	2. DEPTH OF FOOTINGS PILES DEPENDS ON THE HEIGHT OF THE STRUCTURE AND OF SOIL CONDITION AT DESIGNATED LOCATION
	3) <u>NORTHAMPTON ST. TO</u> <u>WEST SPRINGFIELD ST.</u> <u>DWG. SP-2</u>	1 STORY-UP	<u>PILES</u>	3. ALL ORGANIC MATERIALS SHALL BE REMOVED FROM THE SPREAD WALL FOOTING AREA AND REPLACED WITH COMPACTED GRAVEL
	4) <u>WEST SPRINGFIELD ST.</u> <u>TO DAVENPORT ST</u> <u>DWG. SP-3</u>	1 STORY-UP	<u>PILES</u>	
	5) <u>DAVENPORT ST.</u> <u>TO CLARENDON ST</u> <u>DWG. SP-4</u>	1 STORY-UP	<u>PILES</u>	

THE THOMPSON & LICHTNER CO., INC.

SUBJECT SOUTH END URBAN RENEWAL AREA R-56

SHEET NO. 3
DATE 1/3/64
MADE BY V.O.
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RECOMMENDED FOUNDATIONS

AREA No.	AREA/LOCATION	TYPE OF BUILDING	TYPE OF FOUNDATION	REMARKS
2	<u>TREMONT ST.</u>			SEE NOTES 1, 2 & 3 ON SHEET NO. 2
	1) <u>WALPOLE ST TO CAMDEN ST.</u> <u>DWG. SP-5</u>	1 STORY-UP	<u>PILES</u>	
	2) <u>CAMDEN ST. TO RUTLAND ST.</u> <u>DWG. SP-6</u>	1 STORY-UP	<u>SPREAD WALL FOOTINGS ON COMPACTED GRAVEL FILL</u> <u>MAX. LOAD 1 TO 1.5 TN/SQ. FT.</u> <u>OR PILES</u>	
		3 STORIES-UP	<u>PILES</u>	
	3) <u>RUTLAND ST TO UNION PARK ST.</u> <u>DWG-SP-7</u>	1-3 STORIES	<u>SPREAD WALL FOOTINGS ON COMPACTED GRAVEL FILL</u> <u>MAX LOAD 2 TN/SQ. FT.</u> <u>OR PILES</u>	
		3 STORIES-UP	<u>PILES</u>	
	4) <u>UNION PARK ST TO HERALD ST.</u> <u>DWG SP-8</u>	1 TO 3 STORIES	<u>PILES</u> <u>OR SPREAD WALL FOOTINGS ON COMPACTED GRAVEL FILL</u> <u>MAX. LOAD 1.5 TO 2 TN/SQ. FT.</u>	
		3 STORIES-UP	<u>PILES</u>	

THE THOMPSON & LIGHTNER CO., INC.

SUBJECT SOUTH END URBAN RENEWAL AREA

R-56

SHEET NO. 4
DATE 1/3/64
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RECOMMENDED FOUNDATIONS

AREA No.	AREA / LOCATION	TYPE OF BUILDING	TYPE OF FOUNDATION	REMARKS
3	<u>SHAWMUT AVE</u>			SEE NOTES 1, 2 & 3 ON SHEET No. 2
	1) <u>BALL ST. TO LENOX ST.</u> <u>DWG. SP-9</u>	1 STORY - UP	<u>PILES</u>	
	2) <u>LENOX ST. TO MASSACHUSETTS AVE</u> <u>DWG. SP-9</u>	1-3 STORIES -	<u>SPREAD WALL FOOTINGS ON COMPACTED GRAVEL FILL</u> MAX. LOAD $2\frac{1}{2}$ TON / 50 FT.	
		3 STORIES - UP	<u>PILES</u>	
	3) <u>MASSACHUSETTS AVE TO WORCESTER ST.</u> <u>DWG. SP-10</u>	1-3 STORIES	<u>SPREAD WALL FOOTINGS ON COMPACTED GRAVEL FILL</u> MAX. LOAD $2\frac{1}{2}$ TON / 50 FT.	
		3 STORIES - UP	<u>PILES</u>	
	4) <u>WORCESTER ST. TO RUTLAND ST.</u> <u>DWG. SP-10</u>	1 STORY - UP	<u>PILES</u>	
	5) <u>RUTLAND ST. TO W - CANTON ST.</u> <u>DWG. SP-10</u>	1-3 STORIES	<u>SPREAD WALL FOOTINGS ON COMPACTED GRAVEL FILL</u> MAX. LOAD $2\frac{1}{2}$ TON / 50 FT.	
		3 STORIES - UP	<u>PILES</u>	
	6) <u>WEST CANTON ST. TO DWIGHT ST.</u> <u>DWG. SP-11</u>	1-3 STORIES	<u>SPREAD WALL FOOTINGS ON COMPACTED GRAVEL FILL</u> MAX. LOAD $1.5\frac{1}{2}$ TON / 50 FT.	
		3 STORIES - UP	<u>PILES</u>	
	7) <u>DWIGHT ST. TO HERALD ST.</u> <u>DWG. SP-12</u>	1-3 STORIES	<u>PILES</u> OR <u>SPREAD WALL FOOTINGS ON COMP. GRAVEL FILL</u> MAX. LOAD $1.5\frac{1}{2}$ TON / 50 FT.	
		3 STORIES - UP	<u>PILES</u>	

SUBJECT SOUTH END URBAN RENEWAL AREA R-56

RECOMMENDED FOUNDATIONS

AREA NO.	AREA / LOCATION	TYPE OF BUILDING	TYPE OF FOUNDATION	REMARKS
4	<u>WASHINGTON ST.</u>			SEE NOTES 1, 2 & 3 ON SHEET No. 2
	1) <u>BALL ST. TO WORCESTER ST.</u> <u>DWG. SP-13</u>	1-3 STORIES	<u>SPREAD WALL</u> <u>FOOTINGS ON</u> <u>COMPACTED</u> <u>GRAVEL FILL</u> <u>MAX. LOAD 2TH / 59 FT</u>	
		3 STORIES-UP	<u>PILES</u>	
	2) <u>WORCESTER ST. TO</u> <u>EAST-SPRINGFIELD ST</u> <u>DWG SP-13</u>	1-3 STORIES	<u>SPREAD WALL</u> <u>FOOTINGS ON</u> <u>COMPACTED</u> <u>GRAVEL FILL</u> <u>MAX. LOAD 2TH / 59 FT</u>	
		3 STORIES-UP	<u>PILES</u>	
	3) <u>E-SPRINGFIELD ST. TO</u> <u>E.-BROOKLINE ST DWG SP-14</u>	1-3 STORIES	<u>SPREAD WALL</u> <u>FOOTINGS ON</u> <u>COMPACTED</u> <u>GRAVEL FILL</u> <u>MAX. LOAD</u> <u>1.5-2TH / 14 FT</u>	
		3 STORIES-UP	<u>PILES</u>	
	4) <u>E.BROOKLINE ST. TO</u> <u>UNION-PARK ST. DWG. SP-15</u>	1-3 STORIES	<u>SPREAD WALL</u> <u>FOOTINGS ON</u> <u>COMPACTED</u> <u>GRAVEL FILL</u> <u>MAX. LOAD 2TH / 59 FT</u>	
		3 STORIES-UP	<u>PILES</u>	
	5) <u>UNION-PARK ST. TO</u> <u>RUTLAND ST.</u> <u>DWG. SP-15</u>	1 STORY-UP	<u>PILES</u>	
	6) <u>RUTLAND ST. TO DOVER ST</u> <u>DWG. SP-16</u>	1-3 STORIES	<u>SPREAD WALL</u> <u>FOOTINGS ON</u> <u>COMPACTED</u> <u>GRAVEL FILL</u> <u>MAX. LOAD 1.5TH / 59 FT</u>	
		3 STORIES-UP	<u>PILES</u>	
	7) <u>DOVER ST. TO COMPTON ST.</u> <u>DWG. SP-16</u>	1 STORY-UP	<u>PILES</u>	
	8) <u>COMPTON ST. TO</u> <u>HERALD ST.</u> <u>DWG. SP-16</u>	1-3 STORIES	<u>SPREAD WALL</u> <u>FOOTINGS ON</u> <u>COMPACTED</u> <u>GRAVEL FILL</u> <u>MAX. L = 2TH / 59 FT</u>	
		3 STORIES-UP	<u>PILES</u>	



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SUBJECT SOUTH END URBAN RENEWAL AREA R-56

RECOMMENDED FOUNDATIONS

AREA No.	AREA/LOCATION	TYPE OF BUILDING	TYPE OF FOUNDATION	REMARKS
5	<u>HARRISON AVE</u>			SEE NOTES 1, 2 & 3 ON SHEET NO. 2
	1.) <u>THORNDIKE ST. TO</u> <u>EAST CONCORD ST.</u> DWG. SP-17	1 STORY - UP	<u>PILES</u>	
	2.) <u>EAST CONCORD ST. TO</u> <u>PLYMOUTH ST.</u> DWG. SP-18	1 STORY - UP	<u>PILES</u>	
	3.) <u>PLYMOUTH ST. TO</u> <u>ROLLINS ST.</u> DWG. SP-19	1 STORY - UP	<u>PILES</u>	
	4.) <u>ROLLINS ST. TO</u> <u>DOVER ST.</u> DWG. SP-19	1-3 STORIES	<u>PILES</u> / OR <u>SPREAD WALL</u> <u>FOOTINGS ON</u> <u>COMPACTED</u> <u>GRAVEL FILL</u> <u>MAX. LOAD 1.0 TN</u> <u>58. FT.</u>	

THE THOMPSON & LICHTNER CO., INC.

DATE 11/6/64MADE BY V.O.CHECKED BY RFBSUBJECT SOUTH END URBAN RENEWAL AREAR-5G

RECOMMENDED FOUNDATIONS

AREA NO.	AREA / LOCATION	TYPE OF BUILDING	TYPE OF FOUNDATION	REMARKS
6	<u>ALBANY ST.</u>			SEE NOTES 1, 2 & 3 ON SHEET No. 2
	1.) <u>NORTHAMPTON ST.</u> TO <u>EAST NEWTON ST.</u> <u>DWG. SP. 20</u>	1 STORY-UP	<u>PILES</u>	
	2.) <u>EAST NEWTON ST. TO</u> <u>MALDEN ST.</u> <u>DWG. SP. 21</u>	1 STORY-UP	<u>PILES</u>	
	3.) <u>MALDEN ST. TO</u> <u>DOVER ST.</u> <u>DWG. SP. 22</u>	1 STORY-UP	<u>PILES</u>	

BOSTON REDEVELOPMENT AUTHORITY
SOUTH END R-56

PART I - REPORT

SECTION 9. Conclusions and Recommendations

A. Conclusions

1. Despite great variations in details reported herein, there is, for the most part, a uniformity of soils conditions throughout the South End Area. Generally, one-to-forty-foot fills cover a strata of two-to-thirteen-feet of sand and gravel, or one-to-twenty-feet of silt and peat, or eleven-to-forty-five-feet of silt, sand and mud mixture than either one-to-sixty-four-feet of sand, gravel and clay mixture, or varying thicknesses up to 120 feet of soft to stiff clay over sand and gravel.

2. Examination of existing piling showed some rotting, indicating probable lowering of the water levels in some areas, but, generally, water levels are as would be expected from the elevation cutoff and location of piles. Actual lengths of piles are not known but it may be assumed that they were driven to the capacity allowed by the Boston Building Code.

3. On-site observations and information obtained from the records of the Boston Building Department as to conditions of structures supported by pile foundations indicate, that although the piles, in general, were in good condition, a large proportion of these structures were considered in such poor condition as to be condemned. The fault, however, appears not in the piles but largely in poorly constructed foundation walls.

4. Bulging and cracking of building walls were the principal defects listed as reason for condemnation; bulging, cracking and settlement defects in foundation walls were the next principal reason. Building wall defects were apparently due to (1) failure to bond front and rear brick walls to the side brick walls; (2) lack of proper ties between the floor framing and the masonry walls; (3) settlement or lateral movement of foundations; (4) loss of wall integrity due to lack of maintenance against weather. A number of walls collapsed after adjacent structures were removed.

5. Two-thirds of the buildings which have been demolished were less than fifty years old, which would be a minimum life if the buildings were properly maintained. Most structures examined showed gross lack of proper maintenance with respect to both interior and exterior structural elements. Quality of original masonry in most cases was adequate.

6. Many of the structures still standing are in good condition with respect to foundations and walls, and have a potential life of several decades if properly maintained.

B. Recommendations

1. In general, foundations for structures up to three stories can be of the spread footing type placed on compacted gravel. The gravel must be of an 8-inch minimum thickness and must be compacted to 95% of Standard AASHTO Density. Bearing values for these footings may be 1-to-2-ton per square foot. In no case should footings bear on soil where there is a peat or organic silt strata below the bearing soil.

2. In general, structures over three stories in height must be on piles. Piles for structures over eight stories should be of sufficient length to bear on the sand and gravel strata below the clay. In general, steel encased cast-in-place concrete piles of 60 tons or more capacity would be most economical. In a few cases, wooden piles of a 15-ton capacity may be competitive; however, the use of treated wood piles only is recommended.

3. Existing piles can be considered for reuse with loadings of 10 tons per pile; however, the foundation walls of structures that have had the superstructures removed are not reusable. Any piles considered for reuse must have the top section uncovered and examined. Foundation walls and piles of existing buildings to be continued in use should be thoroughly examined.

4. Information developed in this study gives subsurface soils data in more detail than has been previously available, and is sufficient to provide architects and engineers guidance for preliminary considerations in foundation design. Supplementing borings should be taken and soils investigations made for each proposed structure to be built. The data in this report will be of value in determining the kind, depth and number of such borings, and should minimize the number necessary for proper design analysis.

The following map of the South End Urban Renewal Area, with the original shore lines indicated, shows six areas within the renewal area on which are indicated the types of foundation that generally will be required. The seven pages following the map give in detail recommended foundations for each of the six areas.

FOUNDATION AREAS
 UMBUS AVE AREA
 TREMONT ST. AREA
 SHAWMUT AVE AREA
 WASHINGTON ST. AREA
 HARRISON AVE. AREA
 ALBANY ST. AREA

ORIGINAL SHORE LINES



LEGEND

- ① FOUNDATION AREAS #1-6
- SPREAD WALL FOOTINGS AREAS FOR 1 TO 3 STORY BLDGS
- PILE FOUNDATION AREAS FOR 1 TO 3 STORY BUILDINGS
- NOTE: IN ALL FOOTING AREAS FROM #1 TO #6 FOR BUILDINGS HIGHER THAN 3 STORIES -
- PILE FOUNDATIONS ARE RECOMMENDED

FOUNDATION AREAS

SOUTH END URBAN RENEWAL AREA

BOSTON REDEVELOPMENT AUTHORITY

SCALE
APRIL 1962
DRAWING NUMBER

R 56

